What is claimed is:

1. A method for preparing microcapsules comprising the steps of:

(a) mixing a free-radically polymerizable and ethylenically unsaturated monomer, an emulsifier, an ultrahydrophobe, a hydrophobic material, an initiator and deionized water, to prepare a miniemulsion; and

(b) polymerizing the miniemulsion to prepare the microcapsules.

2. A method for preparing microcapsules comprising the steps of:

(a) mixing a free-radically polymerizable and ethylenically unsaturated monomer, an emulsifier, an ultrahydrophobe, a hydrophobic material, a crosslinking agent, an initiator and deionized water, to prepare a miniemulsion; and

(b) polymerizing the miniemulsion to prepare the microcapsules.

3. A method for preparing microcapsules comprising the steps of:

(a) mixing a free-radically polymerizable and ethylenically unsaturated monomer, an emulsifier, an ultrahydrophobe, a hydrophobic material, an initiator and

deionized water, to prepare a miniemulsion; and

(b) adding a crosslinking agent during polymerizing the miniemulsion to prepare the microcapsules.

4. A method for preparing microcapsules comprising the steps of:

(a) mixing a free-radically polymerizable and ethylenically unsaturated monomer, an emulsifier, an ultrahydrophobe, a hydrophobic material, a hydrophilic comonomer, a crosslinking agent, an oil-soluble initiator and deionized water, to prepare a miniemulsion;

(b) polymerizing the miniemulsion to prepare the microcapsules.

5. A method for preparing microcapsules comprising the steps of:

(a) mixing a free-radically polymerizable and ethylenically unsaturated monomer, an emulsifier, an ultrahydrophobe, a hydrophobic material, a hydrophilic comonomer, a crosslinking agent, an oil-soluble initiator and deionized water, to prepare a miniemulsion;

(b) polymerizing the miniemulsion; and

(c) adding a secondary initiator during the polymerization.

6. The method of any one of claims 1 through 5, wherein the hydrophobic material is compatible with the free-radically polymerizable and ethylenically unsaturated monomer and incompatible with a polymer constituting final shells of the microcapsules, and an interfacial tension between the hydrophobic material and water is larger than that between the polymer and water.

7. The method of claim 6, wherein the hydrophobic material is one or more selected from the group consisting of aliphatic and aromatic hydrocarbons of C_4 ~ C_{20} and isomers thereof, aliphatic and aromatic alcohols of C_{10} ~ C_{20}, aliphatic and aromatic esters of C_{10} ~ C_{20}, aliphatic and aromatic esters of C_{10} ~ C_{20}, silicone oils, natural and synthetic oils.

8. The method of claim 1, wherein in step (a), the emulsifier is used in an amount of 0.01 to 5.0 parts by weight, the ultrahydrophobe in an amount of 0.1 to 10 parts by weight, the hydrophobic material in an amount of 10 to 300 parts by weight, and the initiator in an amount of 0.01 to 3 parts by weight, based on 100 parts by weight of the free-radically polymerizable and ethylenically unsaturated monomer.

9. The method of claim 2 or 3, wherein the emulsifier is used in an amount of 0.01 to 5.0 parts by weight, the ultrahydrophobe in an amount of 0.1 to 10 parts by weight, the hydrophobic material in an amount of 10 to 300 parts by weight, the crosslinking agent in an amount of 0.1 to 10 parts by weight, and the initiator in an amount of 0.01 to 3 parts by weight, based on 100 parts by weight of the free-radically polymerizable and ethylenically unsaturated monomer.

10. The method of claim 4 or 5, wherein the emulsifier is used in an amount of 0.01 to 5.0 parts by weight, the ultrahydrophobe in an amount of 0.1 to 10 parts by weight, the hydrophilic comonomer in an amount of 0.1 to 10 parts by weight, the hydrophobic material in an amount of 10 to 300 parts by weight, the crosslinking agent in an amount of 0.1 to 10 parts by weight, the oil-soluble initiator in an amount of 0.01 to 3 parts by weight, and the secondary initiator in an amount of 0.01 to 1 part by weight, based on 100 parts by weight of the free-radically and polymerizable ethylenically unsaturated monomer.

11. The method of any one of claims 1 through 5, wherein polymerizing the miniemulsion is performed at a temperature of 25 to 160℃ for 3 to 24 hours.

12. The method of any one of claims 1 through 5, wherein the free-radically polymerizable and ethylenically unsaturated monomer is one or more selected from the group consisting of methacrylate derivatives, acrylate derivatives, acrylic acid derivatives, methacrylonitriles, ethylenes, butadienes, isoprenes, styrenes, styrene derivatives, acrylonitrile derivatives, vinylester derivatives, and halogenated vinyl derivatives, and mercaptan derivatives.

13. The method of any one of claims 1 through 5, wherein the emulsifier is one or more selected from the group consisting of a nonionic emulsifier, a cationic emulsifier, an anionic emulsifier and an amphiphilic emulsifier.

14. The method of any one of claims 1 through 5, wherein the ultrahydrophobe is a strong hydrophobic material having solubility of 5×10^{-6} g/kg or less in 25 ℃ water.

15. The method of claim 14, wherein the ultrahydrophobe is one or more selected from the group consisting of aliphatic hydrocarbons of C_{12} ~ C_{20}, aliphatic

alcohols of C_{12} ~ C_{20}, alkylacrylates of C_{12} ~ C_{20}, alkyl mercaptans of C_{12} ~ C_{20}, organic dyes, fluorinated alkanes, silicone oils, natural and synthetic oils, oligomers with a molecular weight of 1,000 to 500,000, and polymers with a molecular weight of 1,000 to 500,000.

16. The method of any one of claims 2 through 5, wherein the crosslinking agent is a monomer having two or more unsaturated bonds copolymerizable with the free-radically polymerizable and ethylenically unsaturated monomer.

17. The method of claim 16, wherein the crosslinking agent is one or more selected from the group consisting of allyl methacrylate, ethylene glycol dimethacrylate, ethylene glycol diacrylate, butanediol diacrylate, butanediol dimethacrylate, neopentyl glycol dimethacrylate, hexanediol dimethacrylate, triethylene glycol dimethacrylate, tetraethylene glycol dimethacrylate, trimethylolpropane trimethacrylate, pentaerythritol tetramethacrylate, and divinylbenzene.

18. The method of any one of claims 1 through 3, wherein the initiator is one or more selected from the group consisting of peroxides, persulfates, azo compounds,

and redox compounds.

19. The method of claim 4 or 5, wherein the oil-soluble initiator is a material having solubility of 0.5 g/kg or less in 25 ℃ water.

20. The method of claim 19, wherein the oil-soluble initiator is selected from the group consisting of peroxides, persulfates, azo compounds, and redox compounds.

21. The method of claim 4 or 5, wherein the hydrophilic comonomer is copolymerizable with the free-radically polymerizable and ethylenically unsaturated monomer to increase hydrophilicity of a polymer produced by copolymerization with the free-radically polymerizable and ethylenically unsaturated monomer so that the hydrophobic material used as a core material is stably positioned within a shell made of the polymer.

22. The method of claim 21, wherein the hydrophilic comonomer is one or more selected from unsaturated carboxylic acids selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, crotonic acid, fumaric acid and maleic acid; and unsaturated polycarboxylic acid alkyl esters having at least one

carboxyl group selected from the group consisting of itaconic acid monoethyl ester, fumaric acid monobutyl ester and maleic acid monobutyl ester.

23. The method of claim 5, wherein the secondary initiator is one or more selected from the group consisting of peroxides, persulfates, azo compounds, and redox compounds.

24. The method of claim 5, wherein the secondary initiator is added when a monomer to polymer conversion is 50 to 95%.

25. The method of claim 3, wherein the crosslinking agent is added when a monomer to polymer conversion is 20 to 90%.

26. Microcapsules prepared by the method of any one of claims 1 through 25.

27. The microcapsules of claim 26, wherein the microcapsules are composed of 10 to 80 % by volume of a core made of the hydrophobic material, based on the total volume of the microcapsules, and a polymer shell surrounding the core, and have a particle size of 100 to

2,500 nm.

28. The microcapsules of claim 26, wherein the microcapsules are hollow, gas-filled microcapsules in which the hydrophobic material is removed.